

US EPA ARCHIVE DOCUMENT

THE GREAT LAKES BINATIONAL TOXICS STRATEGY

Great Lakes Binational Toxics Strategy Integration Workgroup Meeting

**November 30, 2011
EPA Region 5 Offices
Chicago, Illinois**

Dioxins and Furans

Work Group Co-Chairs:

Anita Wong, Environment Canada

Erin Newman, U.S. EPA

November 30, 2011

Dioxins/Furans Challenges and Progress

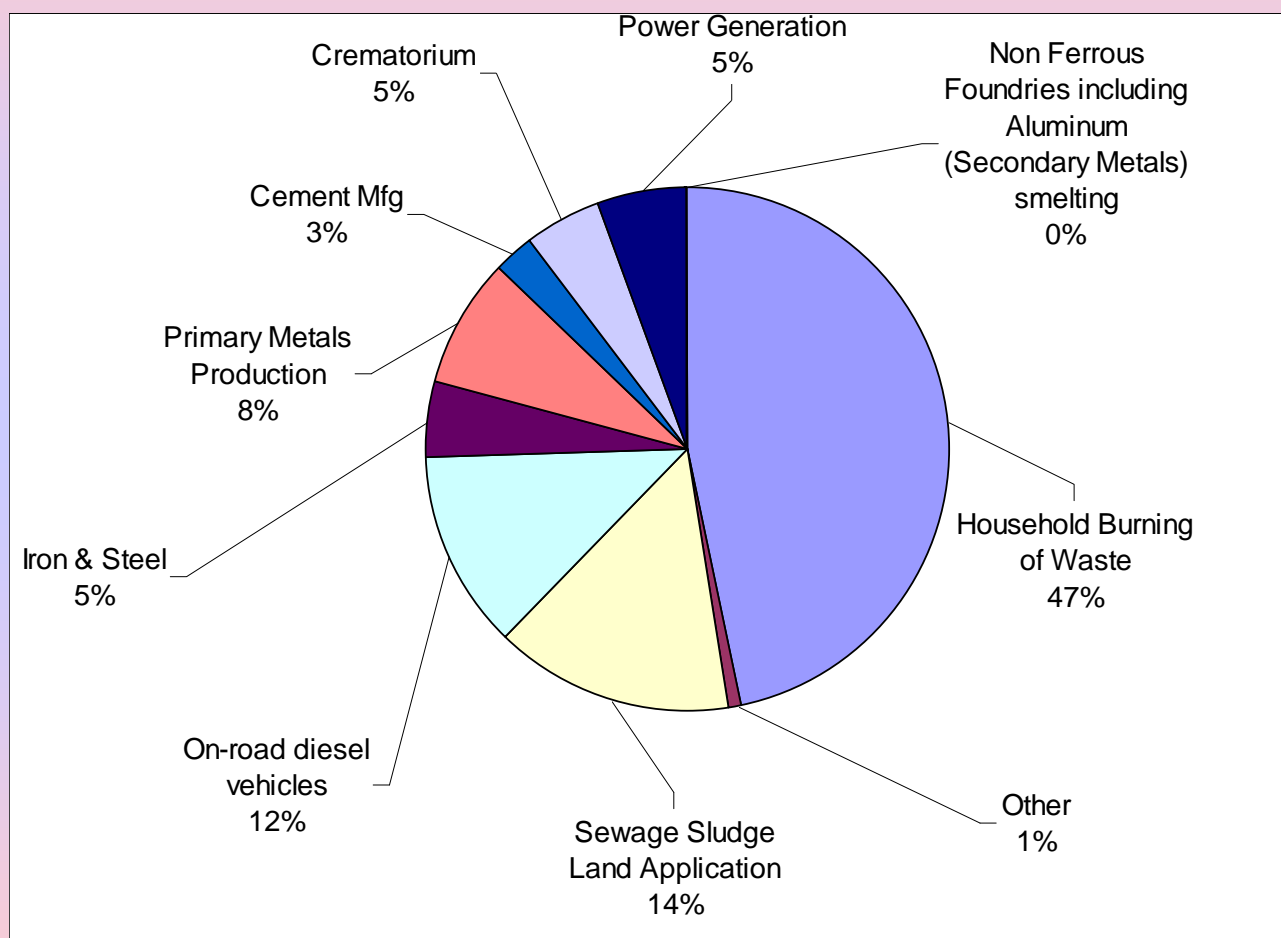
Canadian Challenge Goal

- 90% reduction *
- by 2000
- * All media within Great Lakes Basin, base year 1988
- Progress: >90% reduction in total releases within GL Basin

US Challenge Goal

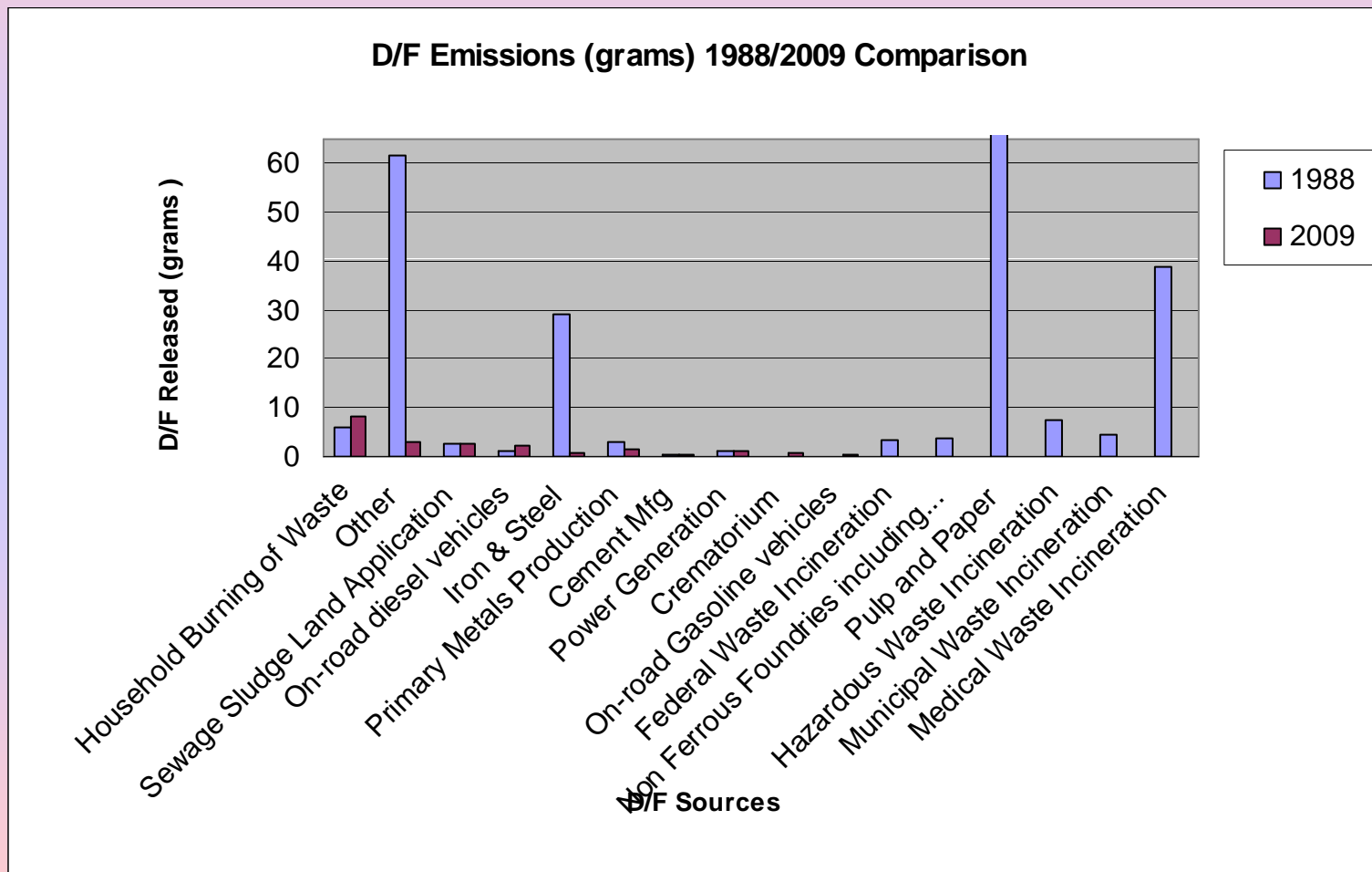
- 75% reduction *
- by 2006
- * Aggregate of air releases nationwide and water releases within the Great Lakes Basin, base year 1987
- Progress: Goal has been met
- 2000 emissions ~1,422 grams 89% reduction from 1987 baseline

2009 Ontario Dioxins/Furans Release Profile

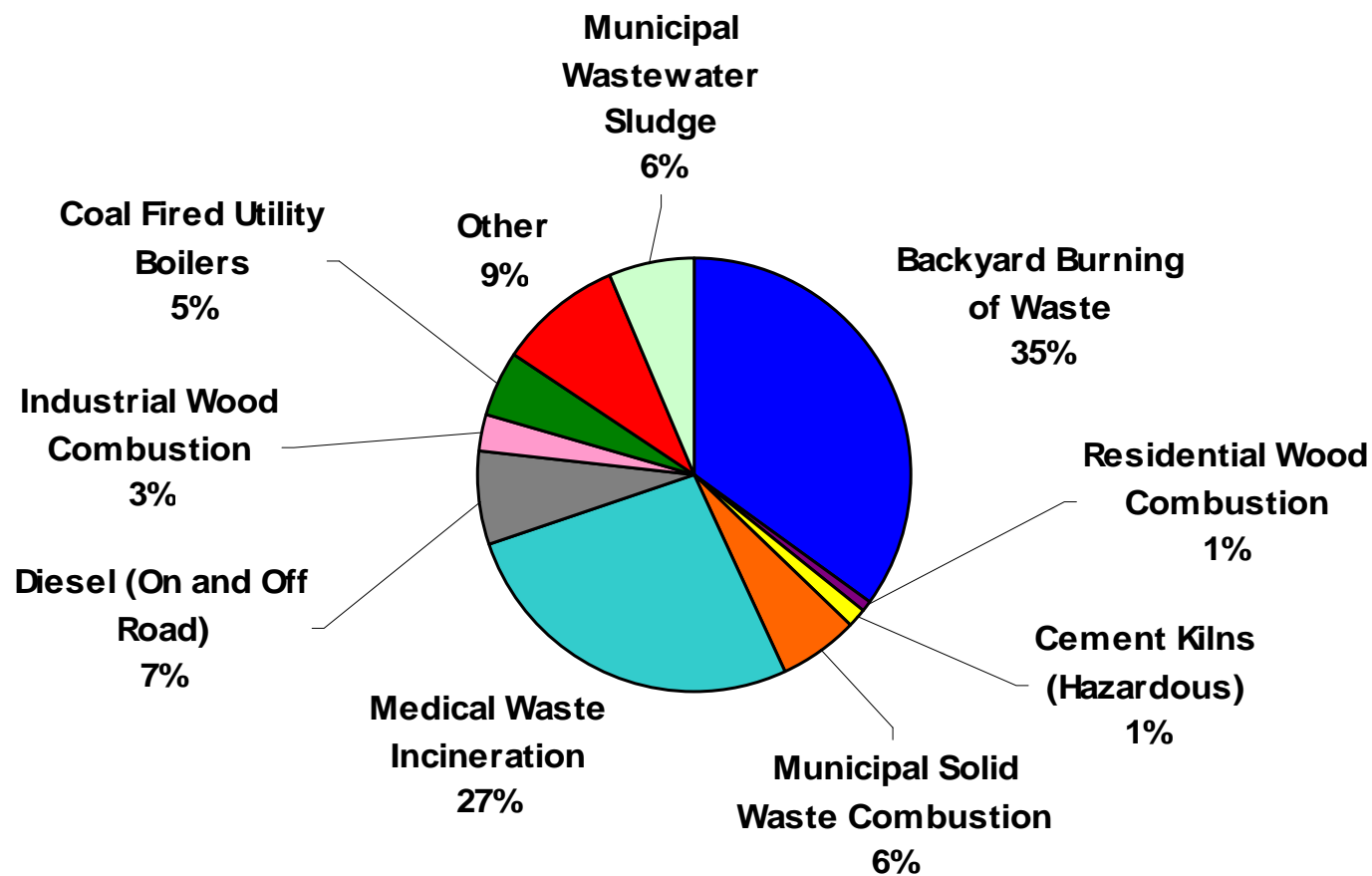


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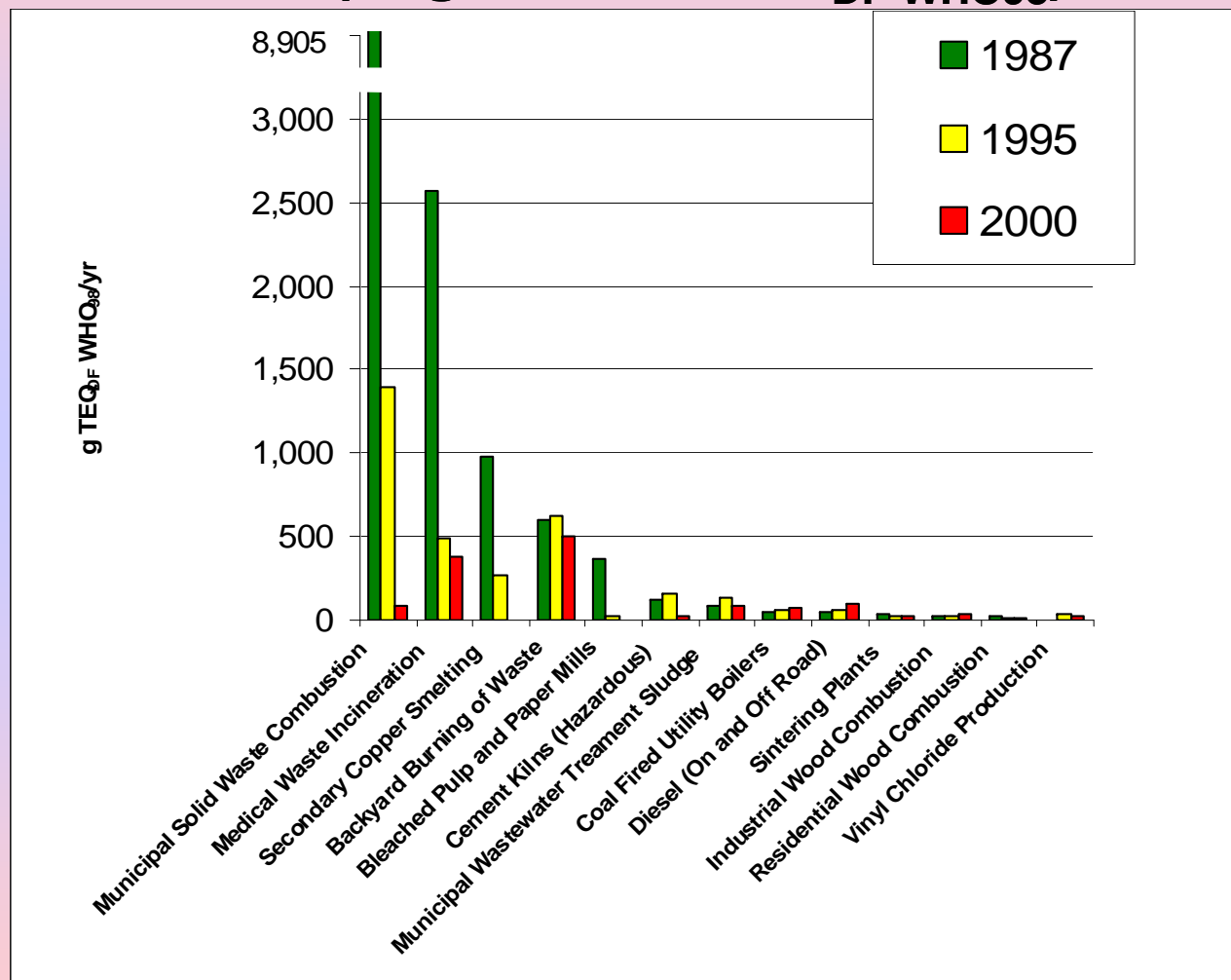
Ontario Dioxins/Furans Release Reduction (grams ITEQ/yr) 1988 – 2009



2000 U.S. Dioxins/Furans Release Profile



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Top U.S. Inventoried Dioxin Emissions for 1987, 1995, & 2000 (in grams of TEQ_{DF-WHO98})

EPA's Dioxin Reassessment

- SAB Recommendations
 - ◆ Improved transparency and uncertainty analysis
 - ◆ Further justification in modeling for cancer and noncancer risk
 - ◆ Calculated a reference dose (RfD) for dioxin
- Assessment has undergone a lengthy and detailed examination.
- Assessment will be split into two Volumes.

EPA's Dioxin Reassessment

- Volume 1: Noncancer Risk
 - ◆ Draft RfD = 0.7 pg TEQ/kg-day
 - ◆ Average U.S. dioxin exposure ~ 0.5 pg TEQ/kg-day
- Volume 2: Cancer Risk
 - ◆ Draft Cancer Oral Slope Factor (OSF) underwent detailed study, but did not change.
 - ◆ 1.0E+6 per mg/kg-day
 - ◆ Defended use of linear extrapolation (i.e., there is no “safe” dioxin dose)

Key Contributors to Dioxin Reductions

Ontario

- Pulp and Paper Effluent Dioxins/furans Regulations
- Canada-wide Standards on Dioxins/furans (waste incineration, iron sintering, electric arc furnace)
- Ontario regulation to phase out medical waste incinerators

U.S.

- MACT standards municipal waste incinerators and medical waste combustion facilities
- Reduction on secondary copper smelting
- Outreach and education efforts on a variety of combustion sources.

GLBTS Activities Contributions

Improved Knowledge

- Prioritized sectors (Decision Tree)
- Developed and implemented Burn Barrel Strategy
- Source measurement project (hospital incinerator, cremator, copper smelter, foundry, pulp mill)
- Technical studies (ash management, landfill fires, uncontrolled combustion, foundries)
- Tracked source releases and environmental/human levels
- Comparison of Canadian and US ambient air networks
- Dioxin/furan Management Assessment

GLBTS Activities Contributions

Engagement of Stakeholders and Outreach

- Health and food agencies – biomonitoring and pathway intervention
- USWAG – solid waste management for treated wood
- Workshops given and materials distributed to minimize backyard trash burning
- States, provinces, locals and national offices – burn barrel outreach
- Commitments under North American Commission for Environmental Cooperation

Uncontrolled Combustion



- Outreach/tracking of uncontrolled combustion sources
 - ◆ Burn barrels
 - ◆ Agricultural plastic burning
 - ◆ Forest fires
- Heard final results of agricultural burning and outdoor wood fired hydronic heaters studies
 - ◆ Provided data showing source of dioxin and PAH emissions.
- Supported NYSDEC's Conservationist for Kids Air edition to promote clean air.

Residual Risks of Dioxins in the Great Lakes

- There is still concern about many sources of uncontrolled combustion.
 - The Workgroup has conducted a variety of outreach efforts on this concern.
 - Further reductions can only be achieved through the government (federal, state, provincial or local) efforts.
- Other sources: In-service PCP treated utility poles, some industrial and urban sources
- Foreign sources of dioxins (China, India)
- Exceedences of dioxin concentration in Great Lakes sediments
- Fish consumption advisories

Summary of Actions

- Dioxin trends show a decrease across media.
- The regulatory and non-regulatory programs of both countries have successfully reduced dioxin releases from large facilities.
- There has been improved knowledge of dioxins through technical studies and public education activities through GLBTS.
- Priority of Dioxin issue has declined in both U.S. and Canada but remains to be of interest in the international arena (UNEP, NACEC)

Benzo(a)Pyrene and Hexachlorobenzene

Work Group Co-Chairs:

Steve Rosenthal, USEPA

Tom Tseng, Environment Canada

B(a)P and HCB Challenge Goals

Canada

- Seek a **90% reduction** in releases
- By 2000

United States

- Seek **reductions in releases** that are within, or have the potential to enter, the Great Lakes Basin
- By 2006

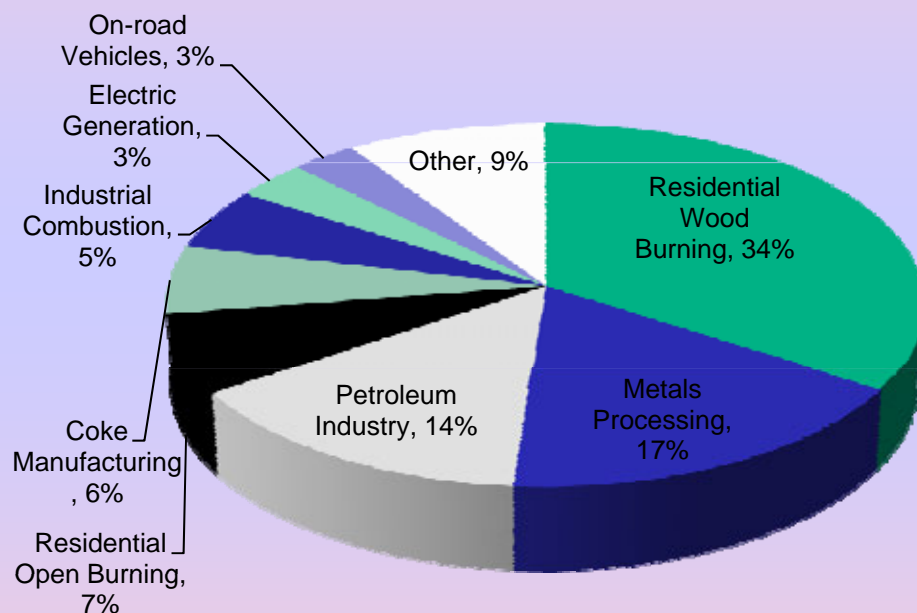
Progress Toward the Challenge Goals

- The U.S. has met its commitments
 - ◆ B(a)P emissions in Great Lakes states **reduced by ~77%** from 1996 to 2001
 - ◆ HCB emissions **reduced** from 1990 to 1999, and further by 2002 (28% reduction from 1999-2002)
- Canada is still working toward its 90% reduction targets
 - ◆ B(a)P releases **reduced by ~53%**, relative to 1988
 - ◆ HCB releases **reduced by ~74%**, relative to 1988

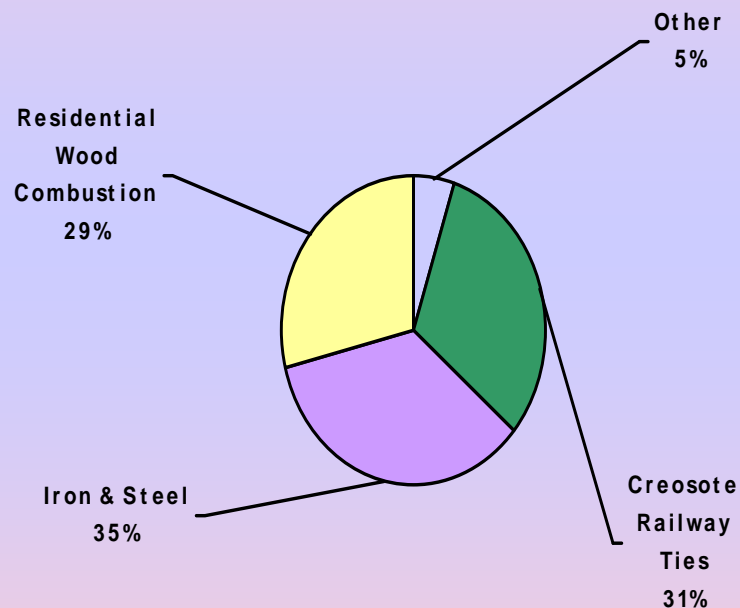
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B(a)P Sources

2005 B(a)P Emissions in Great
Lakes States and Ontario, 61,094
lbs/yr



2009 Ontario B(a)P Sources
8,153 kg (17,938 lbs)



Ontario Iron & Steel figures may be overestimated
due to changes in estimation methods

BaP - Summary of Canadian Actions

- Reductions (from 17,380 kg in 1988 to 8,153 kg in 2009)
 - ◆ Iron & Steel Sector accounts for 82% of reductions
 - ◆ Petroleum Refining Sector accounts for 7% of reductions
 - ◆ Residential Wood Combustion accounts for 5% of reductions
 - ◆ Wood Preservation accounts for 4% of reductions
- Iron & Steel
 - ◆ Environmental Code of Practice for Integrated Steel Mills (2001 - PAHs and Benzene)
 - ◆ Environmental Code of Practice for Non-Integrated Steel Mills (2001 - PAHs, HCB)
 - ◆ Environmental Best Practice Manual for Coke Producers – Controlling and Reducing Emissions of Polycyclic Aromatic Hydrocarbons (PAH) from Metallurgical Coke Production in the Province of Ontario (Canadian Steel Producers Association, 2000)

BaP - Summary of Canadian Actions (continued)

- **Residential Wood Combustion**
 - ♦ **Burn it Smart! Education and Outreach** – Current activity is limited to distribution of existing material. Information is available at <http://www.ec.gc.ca/residentiel-residential/default.asp?lang=En&n=E9FE1750-1>
 - ♦ **Canadian Council of Ministers of the Environment (CCME) seeking proposals for Development of Code Of Practice for Residential Wood Burning Appliances (2011)**
- **Wood Preservation**
 - ♦ **Technical Recommendations Document (2004) and Self-Regulated Certification Program**
 - ♦ **Industrial Treated Wood Users Guidance Document (2004)**
 - ♦ **Creosote Treated Wood Survey (2007)**
 - ♦ **Northern Wood Preservers Inc. Thunder Bay facility mothballed in 2002**
- **Inventory**
 - ♦ **BaP Mapping (2005)**
 - ♦ **MOBILE6C Modelling (2006)**
 - ♦ **PAH Modelling (2009)**

B(a)P – Residential Wood Combustion Summary of United States Actions

- **Dane Co. (WI) wood stove changeout has been successfully completed – about 60 stoves to be changed out**
- **Hoosier SEP – Over one million dollars will be allocated towards a Wood Burning Appliance & Inefficient HVAC Retrofit & Replacement Program in Southern Indiana.**
- **NIPSCO Mitigation Project – A Wood Stove/Boiler Changeout and Retrofit Project is being developed for Northern Indiana**
- **Comprehensive Residential Wood Heater Rule in Development**

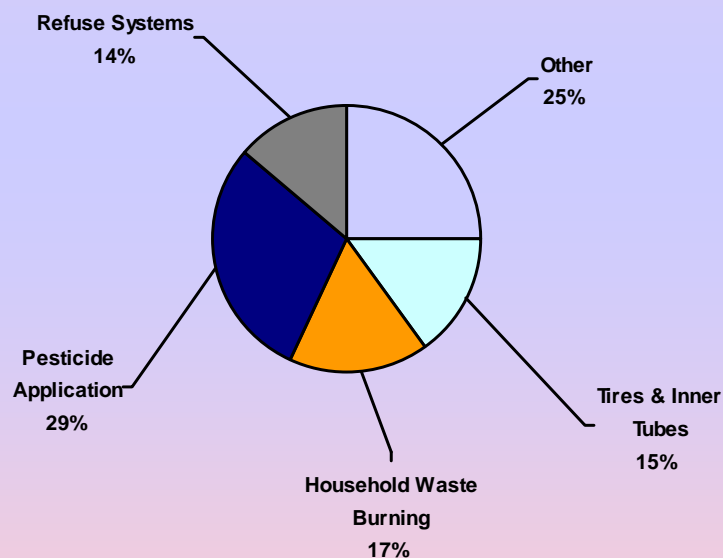
Other B(a)P Activities

Summary of United States Actions

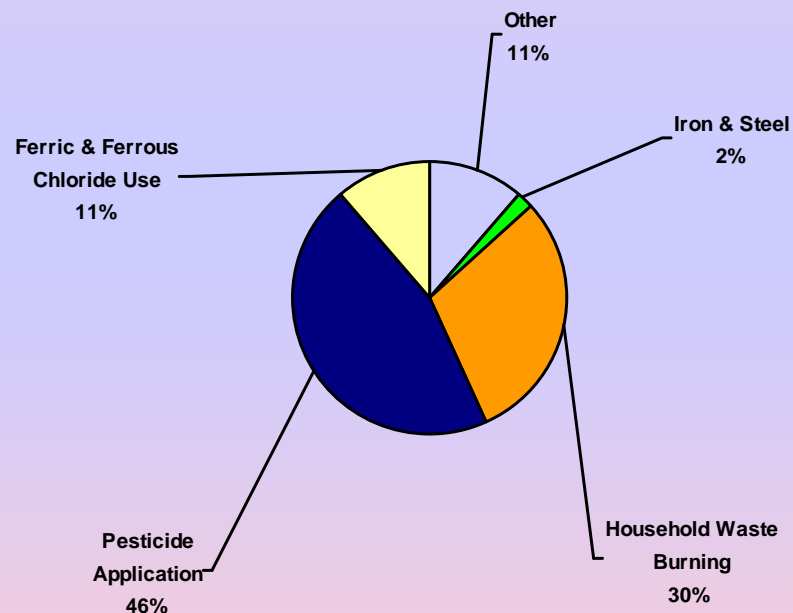
- We provided technical assistance to the Great Lakes and St. Lawrence Cities Initiative with their 1/25/2011 webinar on the potential environmental consequences of using coal tar driveway and parking lot sealers.
- From 2008 to 2010, Midwest Clean Diesel Initiative grantees have reduced over 93,000 tons of pollutants (including PM and B(a)P) by affecting eligible diesel engines and equipment with clean diesel technologies and actions.
- On October 20, 2011, EPA announced the award of \$50 million in clean diesel grants nationally. In Region 5, 9 grants were awarded for a total of \$5.6 million.

HCB Sources

2002 US HCB Sources
~950 kg (2,100 lbs)

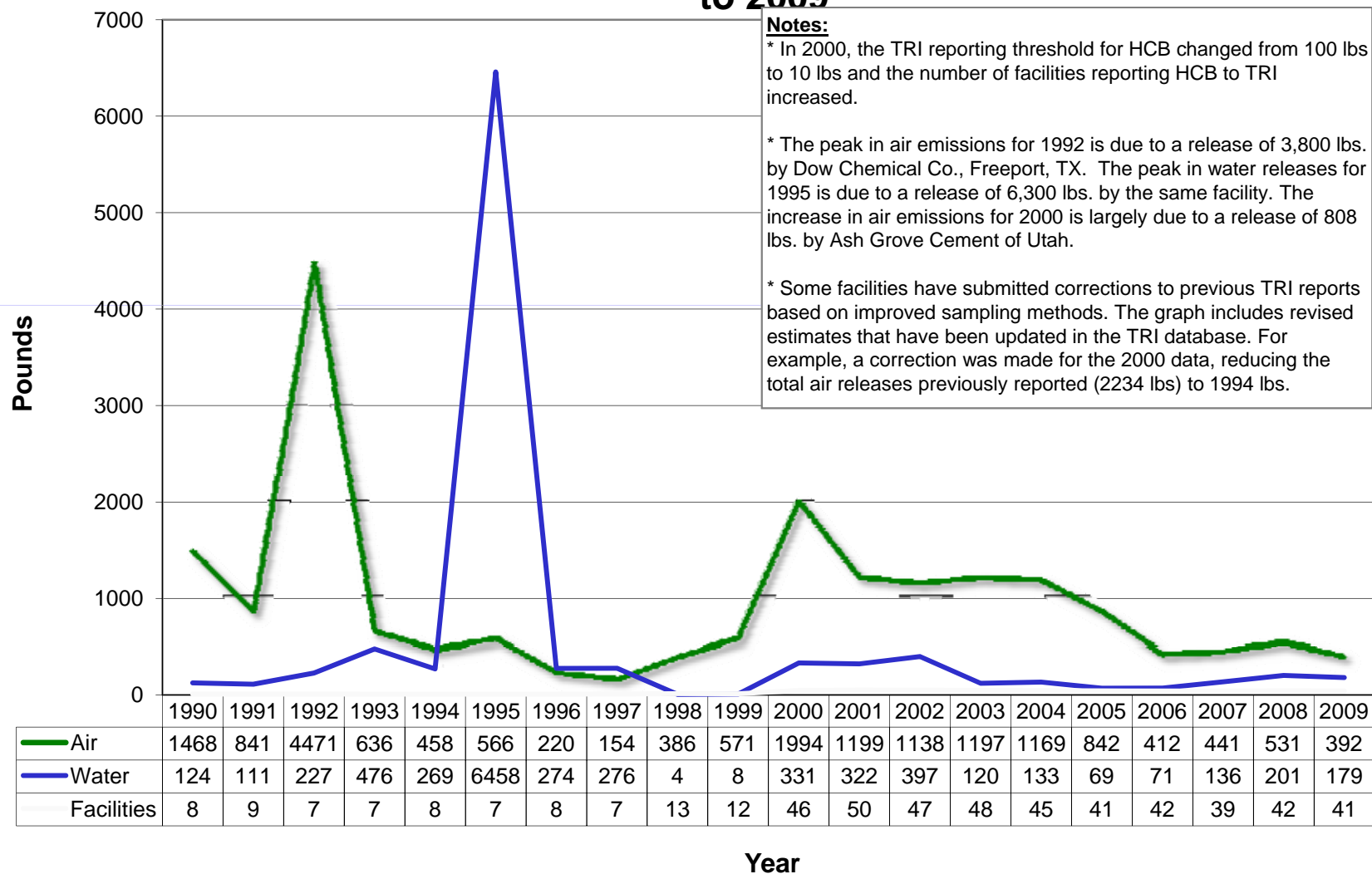


2009 Ontario HCB Sources
13 kg (29 lbs)



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Trends in HCB Air and Water Releases Reported to TRI from 1990 to 2009



HCB - Summary of Canadian Actions

- Reductions (from 50.4 kg in 1988 to 13 kg in 2009)
 - ♦ Pesticide Sector accounts for 80% of reductions
 - ♦ Iron & Steel Sector accounts for 5% of reductions
 - ♦ Municipal Waste Incineration accounts for 4% of reductions
 - ♦ Chemical Sector accounts for 4% of reductions
- Municipal Waste Incineration
 - ♦ Closing of incinerators (Hamilton's SWARU facility in 2002, medical waste incinerators)
- Household Waste Burning (Dioxins/Furans)
 - ♦ Education and Outreach – Environment Canada will review its ability to maintain current level of participation in the activities with the Burn Barrel sub-group and future issues of concern with open burning.
- Inventory
 - ♦ HCB Modelling (2008)

Coal Tar Sealant Study (Toronto)

- Completed by Miriam Diamond of the University of Toronto
- Findings presented at last Integration Workgroup Meeting
- Results presented in a poster at a Dioxin conference in Brussels, Belgium in August of this year
- Study will be published soon

Coal Tar Sealants (CTS)

- A pavement sealant containing refined coal tar and 3.4% to 20% PAHs
- Concern due to runoff of PAHs and toxicity
- USGS published research on PAHs in lake sediment and house dust attributed to CTS
- Industry opponents contend that CTS are one of many sources of PAHs to the environment
- A few localities banned the use and sale of CTS
- Use of CTS is common in some areas
- Addressing potential contamination from CTS remains an outstanding issue for GLBTS

